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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,508	10/15/2004	John G Santobianco	FCS-7371	4199

7590 10/30/2006

Albemarle Corporation
Law Department
451 Florida Street
Baton Rouge, LA 70801-1765

EXAMINER

BERMAN, SUSAN W

ART UNIT PAPER NUMBER

1711

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/511,508

Applicant(s)

SANTOBIANCO ET AL.

Examiner

Susan W. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-30 and 35-44 is/are rejected.
- 7) ☒ Claim(s) 31-34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/04, 5/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3: the phrase "mixture of at least two photopolymerizable monomers" fails to set forth what kinds of photopolymerizable monomers are in the mixture. The claim should clearly recite at least two different kinds of photopolymerizable monomers if applicant intends to claim a mixture. The kinds of monomer in the mixture should be clearly set forth. Claim 11: There is no antecedent basis in claim 10 for the recitation of dodecylmethylanine in claim 11. The amine compound does not contain two alkyl groups, each having 8 to 22 carbon atoms.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 9-22, 34-37, (38-44?) are rejected under 35 U.S.C. 103(a) as being unpatentable over Henne et al (4,666,952). Henne et al disclose photopolymerizable compositions comprising photopolymerizable compounds, a photoinitiator and a tertiary amine of formula (I) set forth in the Abstract. In the formula each of the R¹, R², R³, R⁴ and R⁵ can be

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unsubstituted alkyl. When any of R^1 , R^2 , R^4 , R^5 is methyl or ethyl and the group $-\text{CH}_2-\text{C}(\text{R}_1\text{R}_2)-\text{CH}_2-\text{R}^3$ contains 8 or more carbon atoms wherein R^3 is an unsubstituted alkyl group, the amines disclosed by Henne et al correspond to the definition set forth in instant claim 1. Henne et al teach that R^1 and R^2 are preferably methyl, that R^4 and R^5 are preferably methyl or ethyl and that R^3 is preferably hydrogen, hydroxyl, alkoxy or acyloxy. See column 3, line 48, to column 4, line 6. Alpha-cleavage photoinitiators and hydrogen abstraction photoinitiators are taught in columns 4-5. Dyes and pigments are taught in column 8, lines 22-30. Coatings of paper substrates are taught in column 8, lines 35-40.

It would have been obvious to one skilled in the art at the time of the invention to select tertiary amines from those disclosed by Henne et al wherein at least one of the R groups contains 8 or more carbon atoms, as recited in instant claim 1. Henne et al provide motivation by teaching that species having long chain alkyl groups are effective activators for the disclosed photoinitiators and compositions. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing an effective initiating system.

Claims 1-11, 13-14, 17, 18, 20, 21, 23-30, 35-37 and 38-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 197 616. EP '616 discloses compositions comprising photopolymerizable compounds and a photoinitiator system containing benzil or a benzil ketal and one or more amine reducing agent(s) having the formula set forth in column 2, lines 42-50 and characterized by including diamines of the structural formula in column 4, lines 1-10.

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It would have been obvious to one skilled in the art at the time of the invention to employ more than one reducing agent in the disclosed compositions, as suggested by EP '616. It would have been obvious to one skilled in the art at the time of the invention to include one of the disclosed diamines since EP '616 teaches that the disclosed compositions are characterized by containing a diamine. It would further have been obvious to one skilled in the art at the time of the invention to include an amine of the formula set forth in column 2 in addition to the diamine. One of ordinary skill in the art at the time of the invention would have been motivated by the teaching of EP '616 that such amines are also effective reducing agents.

Claims 1, 3, 5-7, 9, 12-14, 17, 18, 21-30 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dart et al (4,071,424). Dart et al disclose compositions comprising photopolymerizable materials, a Type II photoinitiator and at least one reducing agent. The reducing agents disclosed include amines containing $C_{1 \text{ to } 10}$ alkyl groups, a long chain fatty acid amine $C_{18}H_{37}N(CH_3)_2$ (column 5, lines 29-62). Diamines are taught in column 6, lines 15-49. Pigments, UV or VIS light cure, films and shaped articles are taught in column 9, lines 1-19.

It would have been obvious to one skilled in the art at the time of the invention to employ a mixture of amine reducing agents taught by Dart et al, including a long chain alkyl amine or a long chain fatty amine and a diamine, in the disclosed compositions. Motivation is provided by the disclosure of Dart et al that any of these amine is an effective reducing agent with the disclosed photoinitiators and compositions. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of successfully curing the compositions.

Allowable Subject Matter

Claims 31-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art cited herein and otherwise known to the examiner does not teach the specific combination of a long chain amine, such as dodecyldimethylamine, with one of the specified diamines and 2-hydroxy-2-methyl-1-phenylpropan-one as photoinitiator.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. DE 33 31 157 is equivalent to US 4,666,952.

Kirchmayr et al (4,279,721) discloses compositions comprising an aliphatic tertiary amine which can be dodecyldimethylamine or octyldimethylamine (column 3, line 21).

Eichler et al (4,434,035) disclose mixtures of hydroxyalkyphenones and thioxanthenes in a photoinitiating system and that amines can be added as accelerators. The amines disclosed include octyl-dimethylamine and dodecyldimethylamine (column 6, line 29, to column 7, line 4). No diamines are taught.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W. Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SB
10/25/06


Susan W Berman
Primary Examiner
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